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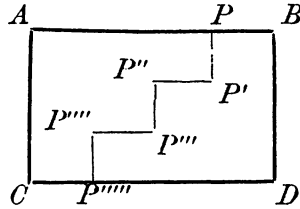
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parts that the parts joined together may form a square?

**Solution by H. W. DRAUGHON, Clinton, Louisiana.**

Let  $ABCD$  be the board, and let the broken line  $PP'P''P'''P''''$  be the line of division.

We make  $BP = P'P'' = P'''P'''' = P''''C = 4$  inches, and all parallel to  $BP$ ; also we make,  $PP' = P''P''' = P''''C = 3$  inches, and all parallel to  $BD$ . From the construction it is obvious that if  $B$  be placed at  $P'$  and  $P''''$  at  $C$  the resulting figure will be 1 foot square.



solved in a similar manner by G. B. M. Zerr, Robert J. Aley, and J. A. Calderhead.

## PROBLEMS.

12. Proposed by CHARLES E. MYERS, Canton, Ohio.

A man made his will to this effect: that if only the daughter returned home his wife should have  $\frac{2}{3}$  and the daughter  $\frac{1}{3}$  of the estate; and if only the son returned, his wife should have  $\frac{1}{3}$  and the son  $\frac{2}{3}$ . But the son and daughter both returned. How should the estate be divided?

13. Proposed by J. R. BALDWIN, A. M., Professor of Mathematics in the Davenport Business College, Davenport, Iowa.

A man borrowed \$5000 at a western bank giving his note for \$5000 due in 5 years without grace at 8% interest payable annually, and pays the banker a bonus of \$300 in cash for making the loan; what rate per cent. does he pay?

[Solutions to these problems should be received by April 1st.]

## ALGEBRA.

Conducted by J. M. COLLAU, Monterey, Va. All contributions to this department should be sent to him.

## PROBLEMS.

9. Proposed by Professor G. B. M. ZERR, A. M., Principal of Schools, Staunton, Virginia.

$$\left. \begin{aligned} x + y^2 + z^2 &= 21 \\ x^2 + y^3 + z &= 45 \\ x^3 + y + z^2 &= 71 \end{aligned} \right\} \text{ Find } x, y, \text{ and } z.$$

10. Proposed by J. K. ELLWOOD, A. M., Principal of Colfax School, Pittsburg, Pennsylvania,

$$\begin{aligned} x^2 + y^2 + w^2 + z^2 &= 65 \dots (1), \\ (x+z)^2 + (y+w)^2 &= 113 \dots (2), \\ (y+z)^2 + (x+y)^2 &= 117 \dots (3), \\ (x+y)^2 + (z+w)^2 &= 125 \dots (4). \end{aligned}$$

How many values has each of the four unknown quantities?

11. Proposed by ISAAC L. BEVERAGE, Monterey, Virginia.

Two men,  $A$  and  $B$ , had a money-box, containing \$210, from which each drew